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CLAIMS

- 1. A method for converting an amino ether alcohol to an amino ether amine, the method comprising contacting a catalyst comprising at least one of zinc oxide and a zinc salt, and at least one of copper oxide and a copper salt, with a vapor phase mixture comprising the amino ether alcohol and an amine.
- 2. The method of claim 1, wherein the amino ether alcohol has the formula NR¹R²R³, wherein R¹ and R² each individually is selected from the group consisting of H, C1-C10 alkyl, a C6-C10 aryl, and a C6-C10 aralkyl, R³ is a C4-C10 alkyl group having within it an ether linkage and also containing at least one hydroxyl group, and the amine has the formula, NHR⁴R⁵, wherein R⁴ and R⁵ each individually is H, a C1-C10 alkyl, a C6-C10 aryl, or a C6-C10 aralkyl group, provided that no more than one of R⁴ and R⁵ is H.
- 3. The method of claim 1, wherein the amino ether alcohol is dimethylaminoethoxyethanol.
- 15 4. The method of claim 1, wherein the amine is a monoalkylamine and/or a dialkylamine.
 - 5. The method of claim 1, wherein the amine is monomethylamine and/or dimethylamine.
- 6. The method of claim 1, wherein the contacting is performed in a continuous process comprising passing the vapor phase mixture over the catalyst.
 - 7. The method of claim 1, wherein the contacting is performed at a temperature ranging from 120 °C to 300 °C and a pressure ranging from 0 to 500 psig (101 to 3549 kPa).
- 8. The method of claim 1, wherein the contacting is performed at a temperature ranging 180 °C to 220 °C and a pressure ranging from 0 to 100 psig (101 to 791 kPa).

- 9. The method of claim 8, wherein the contacting is performed at a pressure of 40 to 80 psig (377 to 653 kPa).
- 10. The method of claim 1, wherein the contacting is performed in a fixed bed tubular reactor.
- 5 11. The method of claim 1, wherein a weight ratio of copper to zinc in the catalyst ranges from 0.3 to 6.
 - 12. The method of claim 1, wherein a weight ratio of copper to zinc in the catalyst ranges from 0.4 to 3.
- 13. The method of claim 1, wherein the catalyst further comprises a promoter comprising at least one of an alkali metal, an alkaline earth metal, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, and terbium, the promoter present at 0.05 to 5 wt%, based on a total weight of the catalyst.
 - 14. The method of claim 13, wherein the promoter is present at 0.2 to 2 wt%, based on the total weight of the catalyst.
- 15. The method of claim 13, wherein the promoter is present at 0.3 to 1.5 wt%, based on the total weight of the catalyst
 - 16. The method of claim 13, wherein the promoter comprises at least one of potassium, rubidium, and cesium.
- 17. The method of claim 13, wherein the promoter comprises at least one of magnesium, calcium, and strontium.
 - 18. The method of claim 13, wherein the promoter comprises at least one of lanthanum, cerium, and praseodymium.
 - 19. The method of claim 13, wherein the catalyst further comprises at least one of Al₂O₃ and SiO₂.

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- 20. The method of claim 1 wherein the method further comprises, prior to said contacting, treating the catalyst with hydrogen under conditions sufficient to form an activated catalyst.
 - 21. The method of claim 20 wherein the hydrogen is generated by interaction of the catalyst with an organic compound.
- 22. The method of claim 1 wherein the vapor phase mixture further comprises hydrogen.
- 23. A method for converting dimethylaminoethoxyethanol to an amino ether amine, the method comprising:
- contacting a catalyst with hydrogen gas to produce an activated catalyst; and contacting the activated catalyst with a vapor phase mixture comprising dimethylaminoethoxyethanol and at least one of methylamine and dimethylamine; wherein the catalyst comprises the following materials in the following amounts, based on total catalyst weight:
- 15 20 to 70 wt% copper oxide,
 - 20 to 65 wt% zinc oxide, and
 - 0.3 to 1.5 wt% of at least one of potassium and cesium.